Dividing gives $\frac{EH}{AH}=\frac{\tan\frac{1}{2}(A-B)}{\tan\frac{1}{2}(A+B)}$.

Equating, we have $\frac{a-b}{a+b}=\frac{\tan\frac{1}{2}(A-B)}{\tan\frac{1}{2}(A+B)}$.....(1).

From triangle BAE, $\frac{BE}{AB}=\frac{\sin BAE}{\sin AEC}$, or $\frac{a-b}{c}=\frac{\sin\frac{1}{2}(A-B)}{\sin\frac{1}{2}(A+B)}$...(2)

Also $AH=AD+DE+EH=AC\cos\frac{1}{2}(A+B)+CE\cos\frac{1}{2}(A+B)+EB\cos\frac{1}{2}(A+B)$, $=(a+b)\cos\frac{1}{2}(A+B)$.

In triangle BAH, $AH=c\cos\frac{1}{2}(A-B)$. Equating these values of AH gives $\frac{a+b}{c}=\frac{\cos\frac{1}{2}(A-B)}{\cos\frac{1}{2}(A+B)}$....(3) The quotient of (2) divided by (3) gives (1) also.

CERTAIN SERIES OF INTEGRAL, RATIONAL, SCALENE TRIANGLES.

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Investigation leads to the belief that there is an endless number of infinite series of integral, rational, scalene triangles, wherein the base of every term in nth series is $n+2$, and the difference between the other two sides is constant.

EXAMPLES:

I. 3, 4, 5: 3, 25, 26: 3, 148, 149: 3, 865, 866: 3, 5044, 5045: &c.
II. 4, 3, 5: 4, 13, 15: 4, 51, 53: 4, 191, 193: 4, 723, 725: &c.
III. 5, 3, 4: 5, 29, 30: 5, 291, 292: 5, 2885, 2886: 5, 28563, 28564: &c.
Also;5, 5, 6: 5, 51, 52: 5, 509, 510: 5, 5043, 5044: 5, 49925, 49926: &c.
And;5, 12, 13: 5, 122, 123: 5, 1212, 1213: 5, 12002, 12003: 5,118112,118113: &c.
IV. 6, 25, 29: 6, 481, 485: 6, 8665, 8669: 6, 155521, 155525: &c.
V. 7, 15, 20: 7, 169, 174: 7, 1695, 1700: 7, 16801, 16806: &c.
VI. 8, 15, 17: 8, 123, 125: 8, 975, 977: 8, 7683, 7685: 8, 60495, 60497: &c.
VII. 9, 10, 17: 9, 73, 80: 9, 442, 449: 9, 2593, 2600: 9, 15130, 15137: &c.
VIII. 10, 17, 21: 10, 35, 39: 10, 273, 277: 10, 4049, 4053: &c.
IX. 11, 25, 30: 11, 267, 272: 11, 2665, 2670: 11, 26403, 26408: &c.
X. 12, 17, 25: 12, 365, 373: 12, 6617, 6625: 12, 118805, 118813: &c.
XI. 13, 20, 21: 13, 518, 519: 13, 13460, 13461: 13, 349454, 349455: &c.
XII. 14, 61, 65: 14, 1125, 1129: 14, 20221, 20225: 14, 362885, 362889: &c.
XIII. 15, 7, 20: 15, 28, 41: 15, 106, 119: 15, 1015, 1028: &c.
XIV. 16, 25, 39: 16, 241, 255: 16, 1945, 1959: 16, 15361, 15375: &c.
XV. 17, 25, 26: 17, 144, 145: 17, 841, 842: 17, 4904,4905: 17,28585,28586: &c.
XVI.
XVII. 19, 20, 37: 19, 153, 170: 19, 932, 949: 19,5473, 5490: 19,31940, 31957: &c.
XVIII. 20, 53, 55: 20, 1067, 1069: 20, 21305, 21307: 20, 425051, 425053: &c.
XIX. 21, 13, 20: 21, 82, 89: 21, 493, 500: 21, 2890, 2897: 21, 16861, 16868: &c.
XX.
XXI. 23, 123, 130: 23, 2768, 2775: 23, 60843, 60850: 23, 1336848, 1336855: &c

XXII. 24, 35, 53: 24, 87, 105: 24, 679, 697: &c. And; 24, 7, 25: 24, 203, 221: 24, 3367, 3385: &c.

The present is a very good opportunity to add a few of the many series wherein 25 can be employed as *base* of *every* triangle in *every* series.

XXIII. *a*—25, 39, 40: 25, 1923, 1924: 25,96135,96136: 25,4804851,4804852: &c.
b—25, 51, 52: 25, 2535, 2536: 25, 126723, 126724: 25, 6333639, 6333640: &c.
c—25, 74, 77: &c. *d*—25, 371, 374: &c.
e—25, 34, 39: 25, 348, 353: 25,3466,3471: 25,34332,34337: 25,339874,339879:&c.
f—25, 12, 17: 25, 106,111: 25,1068,1073: 25,10594,10599: 25,104892,104897: &c.
g—25, 29, 36: 25, 153, 160: 25, 777.8, 784.8: 25,3902.76,3909.76: 25,19527.752, 19534.752: 25, 97652.7504, 97659.7504: &c.
h—25, 17, 26: 25, 1360, 1369: 25, 95489, 95498: &c.
i—25, 136, 145: 25, 9809, 9818: : 25, 686800, 686809: &c.
j—25, 17, 28: 25, 63, 74: : 25, 2030, 2041: 25, 18497, 18508: &c.
k—25, 14, 25: 25, 52, 63: 25, 182, 193: 25, 1697, 1708: 25, 15470, 15481: &c.
l— : 25, 741, 754: : 25, 1532261, 1532274: &c.
m— : 25, 101, 114: 25, 3265$\frac{2}{7}$, 3278$\frac{2}{7}$: 25, 7185$\frac{2}{7}$, 7198$\frac{2}{7}$: &c.
n—25, 25, 40: 25, 149, 164: 25, 773.8, 788.8: 25, 3898.76, 3913.76: 25, 19523.752, 19538.752: 25, 97648.7505, 97663.7504: &c.
o—25, 39, 56: : 25, 340, 357: : 25, 38311, 38328: &c.
p—25, 7, 24: : 25, 84, 101: : 25, 10119, 10136: &c.
q—25, 11, 30: 25, 2379, 2398: 25, 310475, 310494: 25, 40360587, 40360606: &c.
r—25, 33, 52: 25, 5393, 5412: 25, 702273, 702292: 25, 91291313, 91291332: &c.
s—25, 113, 132: 25, 15873, 15892: 25, 2064593, 2064612: 25, 268382433, 268382452: &c.
t—25, 267, 286: 25, 35915, 35934: 25, 4669899, 4669918: 25, 607052171, 607052190: &c.
u— : 25, 1129, 1150: 25, 18607, 18628: &c.
v—25, 17$\frac{1}{3}$, 38$\frac{1}{3}$: 25, 59$\frac{4}{5}$, 80$\frac{4}{5}$: 25, 92, 113: 25, 1658, 1679: &c.
w—25, 25, 48: 25, 339, 362: 25, 3457, 3480: 25, 34323, 34346: 25, 339865, 339888: &c.
x—25, 3, 26: 25, 97, 120: 25, 1059,1082: 25,10585,10608: 25,104883,104906: &c.
y—25, 16, 39: 25, 246,269: 25,2536,2559: 25,25206,25229: 25,249616,249639: &c.
z—25, 6, 29: 25, 136, 159: 25, 1446, 1469: 25, 14416, 14439: 25,142806,142829: &c.
&—25, 51, 74: 25, 601, 624: 25, 6051, 6074: 25, 60001, 60024: 25, 594051, 594074: &c.